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25X1

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M/EB 129/65
21 April 1965
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MEMORANDUM FOR: Chief, Forces Division, CRR

ATTENTION: 25X1

THROUGH: Chief, Requirements Branch, Reconnaissance Group, CGS

FROM: Chief, Photographic Intelligence Division, CIA

SUBJECT: Missile Launchers, Sary Shagan Launch Complex A

REFERENCES: (a) Requirements Supplement 1 to C-RR3-80,551 and C-RR3-80,730

(b) CIA/PID Projects 30004-5 and 30005-5 Supplement 1

1. This memorandum is in response to paragraph 3 a. of your requirement dated 31 March 1965, which requested descriptions and mensuration of the missile launchers at each of the launch positions at Launch Sites 1 through 6 at Launch Complex A, Sary Shagan, USSR. This report also supplements interoffice memorandum report [redacted] M/EB 121/65, dated 12 April 1965. As work on requirement C-RR4-81,715 (Project 30740-4) was nearing completion, an advanced microstereoscope was made available, enhancing the photo analyst's capability to detect image details previously near or beyond the threshold of detection. Its use required the reaccomplishment of some of the graphics for requirement C-RR4-81, 715, and has resulted in the detection of additional significant details, which are included in this report. Photo Densitometric analysis of critical areas will also be undertaken on an experimental basis. The correlation of isodensity trace analyses and photo analyses hopefully offers a new and useful tool in the exploitation of photography, however, a base of experience in the analysis of isodensity traces of known objects must be established before the technique can be exploited with confidence. 25X1

2. With reference to the two requirements written in September and October 1963 (C-RR3-80,551 and C-RR3-80,730) attention is invited to the fact that the interruptions which have prevented completion of these projects were the result of more urgent requests from ORR and OSI, which have fully occupied the photo analyst assigned to the projects. Essential information requested in the original requirements has been in part compiled and has been on numerous occasions studied and discussed during consultations and briefings in which the requesters and the photo analyst participated. Attention is also invited to the fact that assigned

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SUBJECT: Missile Launchers, Sary Shagan Launch Complex A [redacted] M/EB 129/65

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photo analysts have been working under an ever increasing burden of requirements, necessitating the expenditure of most of their week-ends and holidays in an attempt to satisfy the requirements for quality photo analysis. Added to the requirement of detailed analysis is the periodic interruption of new missions which require that the project analyst perform immediate read-out in support of the Office of Current Intelligence and provide numerous briefings and consultations for ORR and OSI analysts on a variety of installations. The periodic influx of new missions and new requirements also creates a special updating problem in the preparation of inter-office memorandum type reports. When preparing a so called "hard-copy" report, a cut-off date is mandatory in view of the number of different divisions involved in the publication process. However, it is believed that an inter-office memorandum report should be more current. Consequently, when a project requires the expenditure of a large number of man-hours, receipt of supposedly more urgent requirements causes long interruptions which quickly lower the percentage of completion, necessitating the expenditure of many more manhours than would have previously been required to complete the project. The problem of priorities is now receiving close attention and it is hoped that an equitable solution can be found.

3. The photography utilized in satisfying this requirement is KH-7 Mission [redacted] The presence of snow cover has enhanced photo analysis due to the excellent contrast between shadows and surrounding surfaces, however, high contrast conditions make other interpretations more difficult. Measurements have been made by the CIA/PID project analyst, using scale factors derived from mensuration performed by NPIC/TID. These measurements should not be construed as being mensuration data compiled by the NPIC Technical Intelligence Division. Where meaningful mensuration could not be accomplished, dimensions are not shown. Where the objects resolution or orientation with reference to the sun precludes analysis, a description is not included. The identification of objects as launchers or launchers with missiles is possible only through the recognition of gross characteristics and correlating these with size and location criteria. Whenever sufficient detail can be detected to permit some description, a line drawing, with dimensions is included. Horizontal dimensions and heights are considered accurate with a confidence factor of plus or minus four feet or five percent, whichever is larger. Angles of elevation are considered approximate only, with a possible plus or minus margin of error of 15 degrees. All dimensions derived from measurement of shadows have been converted to true dimensions, with the exception of the possible missile in the ready position, launch site 4, launch position 3 (Attachment 1).

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4. Launch Site 1

a. Launch Position 1: A launcher, possibly with a missile in place, is elevated at an angle of approximately 40 degrees.

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b. Launch Position 1A: A suspect launcher approximately is positioned in the center of a semi circular pad approximately 100 feet in diameter, contiguous to the site circumferential access road, between launch positions 1 and 2.

c. Launch Position 2: A launcher is seen in a near horizontal position. The portion which can be detected measures approximately 20 feet long. See Attachment number 1.

d. Launch Position 3: A possible SA-2 type launcher is seen in a near horizontal position. It measures approximately overall. The probable blast deflector can be detected.

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e. Launch Position 4: A probable missile can be seen erected at an angle of approximately 35 degrees.

f. Launch Position 5: A launcher can be seen in a near horizontal position.

g. Launch Position 6: Unoccupied

5. Launch Site 2

None of the launch positions are occupied. The site is inactive.

6. Launch Site 3

a. Launch Position 1: A launcher approximately is seen in a near-horizontal position. See Attachment 1.

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b. Launch Position 2: A launcher, possibly the same length as the launcher in position 1, is probably in a near horizontal position.

c. Launch Position 3: A launcher, possibly the same length as the launcher in position 1, is probably in a near horizontal position.

d. Launch Position 4: A launcher approximately is seen in a near horizontal position. See Attachment 1.

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SUBJECT: Missile Launchers, Sary Shagan Launch Complex A

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e. Launch Position 5: An erector/launcher associated device, as depicted in the line drawings, Attachments 1 and 2, is located near the entrance end of a long revetted position. Approximately 115 feet away, at the opposite end of the revetted position, are two unidentified but possibly similar objects, spaced approximately 10 feet apart. They measure approximately 25X1
5 feet high. The long axis of the erector/launcher associated device is oriented toward one of the two unidentified objects at the opposite end of the revetted position, as shown in Attachment 2. Contiguous to the erector/launcher associated device, on two and probably three sides, are rectilinear shapes with no detectable height. An unidentified narrow striation points down the access road and terminates approximately 55 feet from the erector/launcher associated device. It too has no detectable height. The rectilinear shaped areas on each side of the erector/launcher associated device will possibly be served by an internal rail system, the possible rail bed for which forms an inverted "V" pattern down the length of the revetted launch position. The possible rail beds depart from the rectilinear shaped areas and converge a short distance away, forming a "Y" shaped pattern, then spread out to form the long inverted "V" pattern as they approach the unidentified objects at the opposite end of the revetment. The possible rail beds which form the inverted "V" pattern do not reach the two unidentified objects, but appear to stop short between 5 and 20 feet away.

f. Launch Position 6: An erector/launcher associated device approximately 20 by 10 feet possibly has its long axis oriented toward a nearby vehicle which is in close contact and parked on the access road. (See Attachment 3) The nearby vehicle either has a total length of approximately 50 feet or consists of two 25 foot long vehicles parked bumper to bumper. The variation in tone favors an interpretation of two vehicles, however a single 50 foot long vehicle which includes a transporter can not be ruled out. There is no evidence of rectilinear shaped contiguous areas, with the area around the erector/launcher associated device covered with snow. Faint, snow covered striations, as shown on Attachment 3, indicate the presence of suspect rail beds. The degree of confidence in a rail bed interpretation here is low due to their faint appearance and the fact that the southern suspect rail bed is oriented toward a small, square, unidentified object rather then toward the erector/launcher associated device at the launch point, as is the case at launch position 5. Approximately 115 feet away from the erector/launcher associated device, two possibly similar, 25X1
foot unidentified objects are located approximately 10 feet apart, in a manner similar to launch position 5. Though this launch position is not revetted, the curving access road, similar to that constructed for launch position 5, was constructed at the time that construction on both these new launch positions was initiated, 25X1
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[redacted] 25X1

SUBJECT: Missile Launchers, Sary Shagan Launch Complex A [redacted] 25X1

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7. Launch Site 4

a. Launch Position 1: A launcher approximately [redacted] is in a near horizontal position. (See Attachment 1) 25X1

b. Launch Position 2: A launcher with a possible missile [redacted] 25X1 is in a near horizontal position. (See Attachment 1)

c. Launch Position 3: A launcher in a near horizontal position can be seen oriented toward one of the "rabbit-ear" positions, at the end of which a possible missile can be detected. The direction of the sun with reference to the possible missile's orientation precludes accurate measurements. Each measurement shown on the attached graphic is a maximum measurement, with the actual dimension varying in direct ratio to the height of the possible missile above the ground. The dimensions shown on the graphic include the possible missile and its shadow. (See Attachment 1).

d. Launch Position 4: A possible launcher in a near vertical position. The shadow falls off the pad onto ground at a lower elevation, therefore its height can not be determined.

e. Launch Position 5: A possible launcher in a near vertical position. The shadow falls off the pad onto ground at a lower elevation, therefore its height can not be determined.

f. Launch Position 6: A suspect launcher with a suspect missile in a near horizontal position. (See Attachment 1).

8. Launch Site 5

Three similar erector/launchers, each approximately 46 feet long. The lattice framework running over the erector boom can be detected, however, its true pattern can not be identified. See Attachment 4 and also report [redacted] 25X1 M/EB 121/65, [redacted] 25X1

9. Launch Site 6

Two similar erector/launchers, configured as they are at launch site 5.

10. Discussion

All the launchers at launch sites 5 and 6 are probably similar to each other, but are quite different from the launchers present at launch sites 1 through 4. The launchers at Launch Site 1 are probably all SA-2 launchers. A FAN SONG radar (model A, B, C or E) is identified in the launch site guidance

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area. All the launchers at Launch Sites 3 and 4 are possibly similar to each other, with the probable exception of the device at launch positions 5 and 6, Launch Site 3. Due to the appearance of rectilinear contiguous areas at Launch Position 5, the centrally located raised object near the access end of the revetment is referred to as an erector/launcher associated device. The striations which form the "V" shaped pattern are probably rail beds and their configuration suggests that rail mounted missile dollies can move from the access side of the launch point toward either of the two objects at the opposite end of the position. This configuration further suggests that each missile dolly can move forward toward the launch position and then can move alongside the erector/launcher associated device. Two concepts then present themselves:

a. The missile would be transferred to the launcher before the dolly was shunted to the flanking position, or:

b. The dolly and missile together are shunted to the flanking position before erection takes place.

The latter concept would permit two missiles in firing position simultaneously, with possibly two additional missiles at the opposite end providing a refire capability. Such a system would give each launch position a total of 4 missiles. Using the overlays prepared for your requirement C-RR4-81,715, (Project 30740-4) it appears that Griffon missiles look reasonable when positioned on each side of the erector/launcher associated device.

The former concept assumes that the empty dolly would be shunted to the flanking position after the missile was transferred to the launcher. This system would permit a lesser number of missiles per position and would present a problem in moving the missile from the dolly transporter to the launcher in view of the position of the possible rail "Y". It is also reasonable to ask, why shouldn't the empty missile dolly be returned down the side of the "V" toward the other end of the position after the missile has been transferred to the launcher? Of the three missiles, the Ganef, the Griffon, and the Galosh, the first two would be difficult to transfer to the launcher due to their centers of gravity, unless the launcher could move forward to accept the missile while the dolly transporter was still parked on the opposite side of the possible rail "Y". If the above is reasonable, it would seem to leave the Galosh or a yet unseen missile as a possibility, though it is difficult to visualize a Galosh being fired from such a launch position while a second Galosh was stored in such close proximity.

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[redacted] 25X1

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SUBJECT: Missile Launchers, Sary Shagan Launch Complex A

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The main components of Launch Position 6, Launch Site 3, are probably similar to those seen in Launch Position 5. The erector/launcher associated device appears to be oriented down one of the access roads and is lined up with a long transporter or two smaller vehicles. The variation in tone and height favors an interpretation of two smaller vehicles, however, it is rather unusual that two vehicles should park in such perfect allignment and in such close proximity when there is sufficient space for both to approach the launch point. Consequently, it is suspected that this is one long vehicle or two separate vehicles coupled together.

Considering the evidence presented in this report and in [redacted] 25X1
M/EB 121/65, dated 12 April 1965, it is believed that detailed photo analysis of additional coverage will be required before a highly confident judgement can be made regarding the defensive weapon the Soviets intend to deploy at the Tallinn, Cherepovets, and Leningrad AMM/SAM Launch Complexes. Attention is invited to the different hypotheses discussed in memorandum report [redacted] 25X1
M/EB 121/65.

[redacted] 25X1

12. This project, in reply to paragraph 3 a of Supplement 1 to your basic requirements, is considered complete.

[redacted] 25X1

Enclosures:
Four line drawings (CIA/PID/MEB-P-163/65 thru 166/65)

[redacted] 25X1

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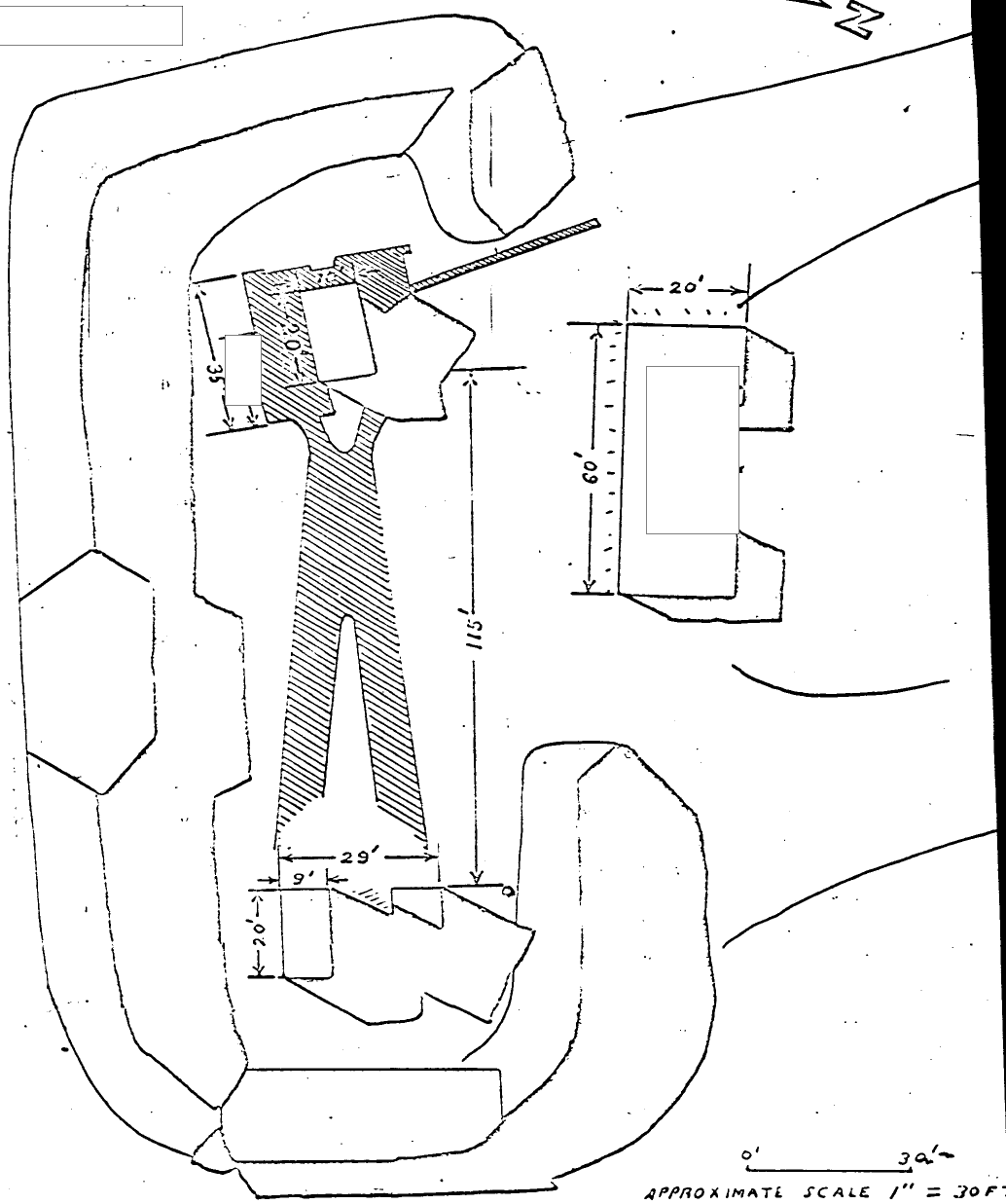
TOP SECRET RUFF

SARY SHAGAN, LAUNCH COMPLEX A
LAUNCH SITE 3, POSITION 5

25X1



25X1
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All measurements for this graphic have been made by the CIA/PID project analyst, using scale factors derived from NPIC/TID measurements. They should not be construed as being mensuration data compiled by the NPIC Technical Intelligence Division.

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CIA/PID/MEB-P-164/65

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ATTACH. NO 2

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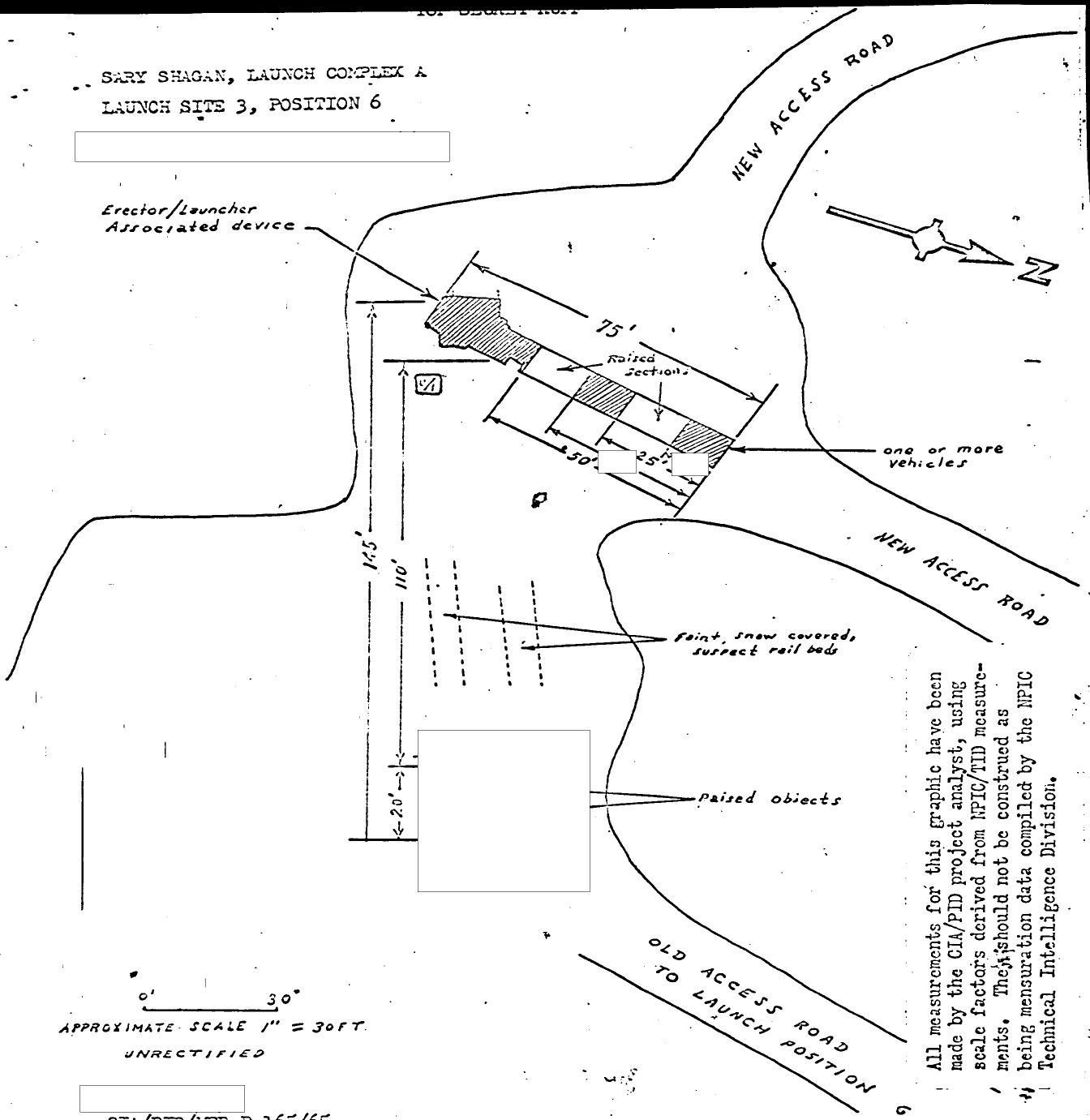
TOP SECRET RUFF

SARY SHAGAN, LAUNCH COMPLEX A
LAUNCH SITE 3, POSITION 6

[redacted]

25X1



25X1

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All measurements for this graphic have been made by the CIA/PID project analyst, using scale factors derived from NPIC/TID measurements. This should not be construed as being mensuration data compiled by the NPIC Technical Intelligence Division.

[redacted]

CIA/PID/MEB-P-165/65

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ATTACH. NO. 3

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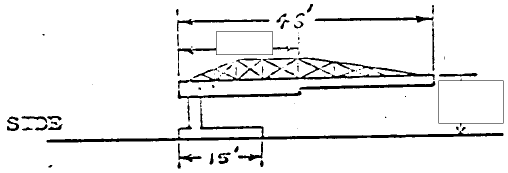
SARY SHAGAN LAUNCH COMPLEX A

Launch Sites 5 and 6



The design of the lattice supporting framework is hypothetical.

25X1

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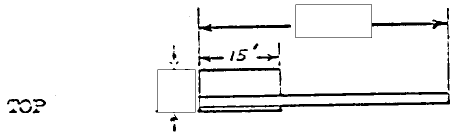

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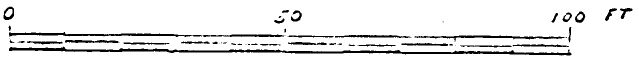

Approximate Scale: 1 inch equals 30 feet

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CIA/PID/MEB-P-166/65 TOP SECRET RUFF ATTACH. NO. 4

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